

=> FILE REG  
FILE 'REGISTRY' ENTERED AT 11:42:17 ON 05 FEB 2009  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2009 American Chemical Society (ACS)

=> D HIS

FILE 'LREGISTRY' ENTERED AT 11:14:39 ON 05 FEB 2009

L1 STR  
L2 STR

FILE 'REGISTRY' ENTERED AT 11:21:39 ON 05 FEB 2009

L3 SCR 2043  
L4 5 S L1 AND L2 AND L3

FILE 'HCAPLUS' ENTERED AT 11:25:46 ON 05 FEB 2009

L5 52 S NARIHIRO ?/AU  
L6 983 S TAMANO ?/AU  
L7 2844 S TSUSHIMA ?/AU  
L8 2 S L5 AND L6 AND L7  
SEL L8 2 RN

FILE 'REGISTRY' ENTERED AT 11:26:22 ON 05 FEB 2009

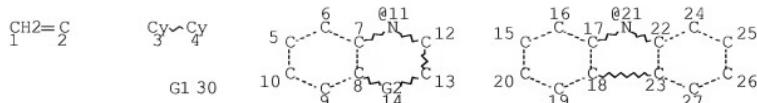
L9 27 S E1-E27  
L10 10 S L9 AND PMS/CI  
L11 STR L1  
L12 STR L2  
L13 4 S L11 AND L12 AND L3  
L14 SCR 2127  
L15 3 S L11 AND L12 AND L3 AND L14  
L16 12 S L11 AND L12 AND L3 AND L14 FUL  
SAV L16 GAR950/A

FILE 'ZCA' ENTERED AT 11:41:39 ON 05 FEB 2009

L17 10 S L16

FILE 'REGISTRY' ENTERED AT 11:42:17 ON 05 FEB 2009

=> D L16 QUE STAT  
L3 SCR 2043  
L11 STR



```

VAR G1=11/21
REP G2=(0-2) A
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
GGCAT IS UNS AT 3
GGCAT IS UNS AT 4
DEFAULT ECLEVEL IS LIMITED
    
```

```

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 28
    
```

```

STEREO ATTRIBUTES: NONE
L12 STR
    
```



```

NODE ATTRIBUTES:
CONNECT IS E3 RC AT 6
DEFAULT MLEVEL IS ATOM
GGCAT IS UNS AT 5
DEFAULT ECLEVEL IS LIMITED
    
```

```

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 8
    
```

```

STEREO ATTRIBUTES: NONE
L14 SCR 2127
L16 12 SEA FILE=REGISTRY SSS FUL L11 AND L12 AND L3 AND L14
    
```

100.0% PROCESSED      142 ITERATIONS

12 ANSWERS

SEARCH TIME: 00.00.01

=> FILE ZCA  
FILE 'ZCA' ENTERED AT 11:42:28 ON 05 FEB 2009  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2009 AMERICAN CHEMICAL SOCIETY (ACS)

=> D L17 1-10 BIB ABS HITSTR HITRN RE

L17 ANSWER 1 OF 10 ZCA COPYRIGHT 2009 ACS on STN  
AN 148:157356 ZCA Full-text  
TI Organic electroluminescent devices and display devices  
IN Otsubo, Akihiro; Takahashi, Yoshiaki  
PA Showa Denko K. K., Japan  
SO Jpn. Kokai Tokkyo Koho, 42pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
	-----	---	-----	-----	-----
PI	JP 2008010651	A	20080117	JP 2006-179893	20060629

PRAI JP 2006-179893 20060629

AB Org. EL devices include ≥1 layers contg. polymers which contain structural units based on Ir complexes.

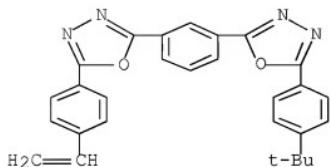
IT 942117-30-8P

(formation of polymers based on Ir complexes for electroluminescent devices and display devices)

RN 942117-30-8 ZCA

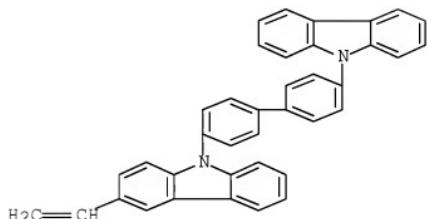
CN Iridium(1+), bis[3,5-difluoro-2-(2-pyridinyl-κN)phenyl-κC] [N-(4-ethenyl-2,6-dimethylphenyl)-N-(2-pyridinyl-κN)]-2-pyridinamine-κN]-, hexafluorophosphate(1-) (1:1), polymer with 9-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-3-ethenyl-9H-carbazole and 2-[4-(1,1-dimethylethyl)phenyl]-5-[3-[5-(4-ethenylphenyl)-1,3,4-oxadiazol-2-yl]phenyl]-1,3,4-oxadiazole (CA INDEX NAME)

CRN 847738-92-5  
CMF C28 H24 N4 O2



CM 2

CRN 728045-11-2  
CMF C38 H26 N2

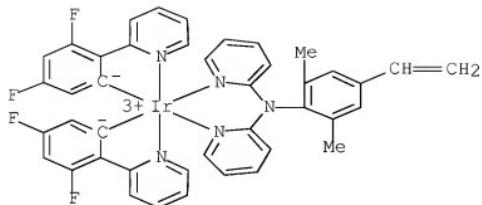


CM 3

CRN 942117-29-5  
CMF C42 H31 F4 Ir N5 . F6 P

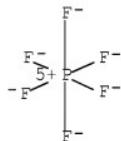
CM 4

CRN 942117-28-4  
CMF C42 H31 F4 Ir N5  
CCI CCS



CM 5

CRN 16919-18-9  
 CMF F6 P  
 CCI CCS



IT 942117-30-8P

(formation of polymers based on Ir complexes for electroluminescent devices and display devices)

L17 ANSWER 2 OF 10 ZCA COPYRIGHT 2009 ACS on STN

AN 147:437053 ZCA Full-text

TI Iridium complex polymer electroluminescent materials, organic electroluminescent elements using them, and displays and surface-emitting light sources

IN Otsubo, Akihiro; Takahashi, Yoshiaki

PA Showa Denko K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 39pp.

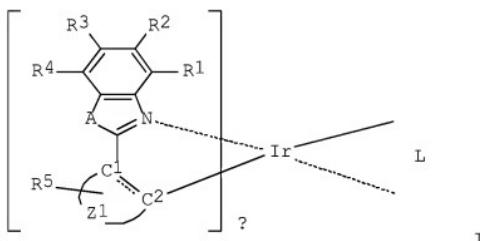
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

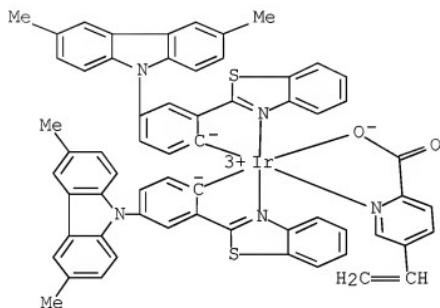
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
PI JP 2007262135	A	20071011	JP 2006-85641	200603 27
PRAI JP 2006-85641		20060327		
GI				



- AB The polymers have iridium complex repeating units I [Z1 = group of atoms for forming 5- or 6-membered (hetero)ring with C1 and C2; A = O, S; R1-R5 = H, arylamino, halo, cyano, nitro, OH, SX1, O2CX2, NH2, C1-10 alkoxy, etc.; X1, X2 = C1-22 alkyl, C6-21 aryl, etc.; ≥1 of R1-R5 = arylamino; bond between C1 and C2 = single or double bond; L = bidentate ligand of monovalent anion having polymerizable functional group]. Long-life polymer luminescent materials emitting various color with high efficiency are provided.
- IT 952040-32-3P  
(iridium complex polymer electroluminescent materials for org. EL displays)
- RN 952040-32-3 ZCA
- CN Iridium, bis[2-(2-benzothiazolyl- $\kappa$ N3)-4-(3,6-dimethyl-9H-carbazol-9-yl)phenyl- $\kappa$ C](5-ethenyl-2-pyridinecarboxylato- $\kappa$ N1, $\kappa$ O2)-, polymer with  
2-[4-(1,1-dimethylethyl)phenyl]-5-(4'-ethenyl[1,1'-biphenyl]-4-yl)-  
1,3,4-oxadiazole and N4-(4-ethenylphenyl)-N4,N4'-bis(3-methylphenyl)-  
N4'-phenyl[1,1'-biphenyl]-4,4'-diamine (CA INDEX NAME)

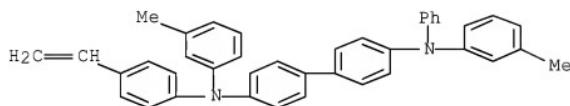
CM 1

CRN 952040-28-7  
CMF C62 H44 Ir N5 O2 S2  
CCI CCS



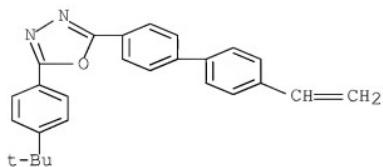
CM 2

CRN 227176-02-5  
CMF C40 H34 N2



CM 3

CRN 85884-56-6  
CMF C26 H24 N2 O



IT 952040-32-3P  
 (iridium complex polymer electroluminescent materials for org. EL displays)

L17 ANSWER 3 OF 10 ZCA COPYRIGHT 2009 ACS on STN  
 AN 147:246531 ZCA Full-text  
 TI Organic electroluminescence element with high brightness and luminescence efficiency  
 IN Tamano, Michiko; Takayama, Masakazu  
 PA Toyo Ink Mfg. Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 37pp.

CODEN: JKXXAF

DT Patent  
 LA Japanese

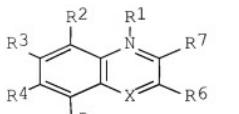
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
PI JP 2007201219	A	20070809	JP 2006-18534		20060127

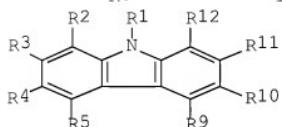
PRAI JP 2006-18534

GI

200601  
 27



I



II

**AB** The org. electroluminescence (EL) element contains (1) host materials, which comprise polymers contg. repeating units of A(BC) [A = nonconjugated trivalent org. group residue; B = direct linkage, (hetero)arylene, ethenylene; C = monovalent group selected from I (R1-R7 = bonding position, H, substituent; X = direct linkage, O, S, NH, CO<sub>2</sub>, etc., may form aryl group) and II (R1-R5, R9-R12 = bonding position, H, substituent)] and (2) dopants of naphthalenes substituted by ≥2 NR<sub>21</sub>R<sub>22</sub> (R<sub>21</sub>, R<sub>22</sub> = alkyl, aryl) and optionally by other substituents of halogen, alkyl, alkoxy, arylthio, etc.

**IT** 847670-91-1

(host; polymer hosts and naphthalene dopants for org. EL devices with high brightness and luminescence efficiency)

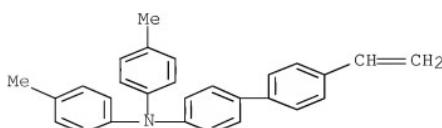
**RN** 847670-91-1 ZCA

**CN** [1,1'-Biphenyl]-4-amine, 4'-ethenyl-N,N-bis(4-methylphenyl)-, polymer with 2-[4-(1,1-dimethylethyl)phenyl]-5-(4'-ethenyl[1,1'-biphenyl]-4-yl)-1,3,4-oxadiazole and 9-(4'-ethenyl[1,1'-biphenyl]-4-yl)-9H-carbazole (CA INDEX NAME)

**CM** 1

**CRN** 847670-86-4

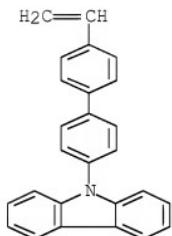
**CMF** C28 H25 N



CM 2

CRN 845755-86-4

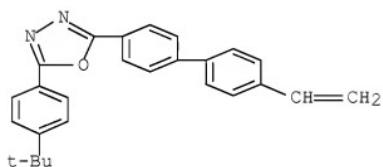
CMF C26 H19 N



CM 3

CRN 85884-56-6

CMF C26 H24 N2 O



IT 847670-91-1

(host; polymer hosts and naphthalene dopants for org. EL devices  
with high brightness and luminescence efficiency)

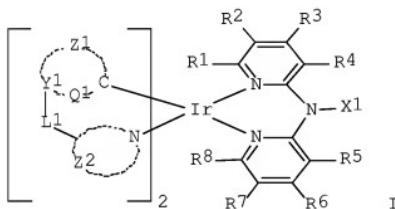
L17 ANSWER 4 OF 10 ZCA COPYRIGHT 2009 ACS on STN

AN 147:105578 ZCA Full-text

TI Surface-emitting organic electroluminescent devices with high color

IN purity, their macromolecular materials, and displays therewith  
 Otsubo, Akihiro; Takahashi, Yoshiaki  
 PA Showa Denko K. K., Japan  
 SO Jpn. Kokai Tokkyo Koho, 36pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2007153917	A	20070621	JP 2005-346588	20051130
PRAI	JP 2005-346588		20051130		
GI					



AB The title materials are polymers having unit derived from Ir complex I [R1-R8 = H, substituent; X1 = H, aryl, azacycle; R1-R8 and/or X1 essentially include polymerizable group; Z1, Y1 = 5- or 6-membered (hetero)cycle; Z2 = 5- or 6-membered heterocycle; L1 = single bond, bivalent bridging group; Y1 = N, C; Q1 = single bond (Y1 = N) or double bond (Y1 = C)].  
 IT 942117-30-8P

(surface-emitting org. EL devices with high color purity contg. polymers with ortho-metalized complex-derived units)

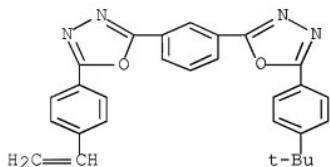
RN 942117-30-8 ZCA

CN Iridium(1+), bis[3,5-difluoro-2-(2-pyridinyl- $\kappa$ N)phenyl- $\kappa$ C] [N-(4-ethenyl-2,6-dimethylphenyl)-N-(2-pyridinyl- $\kappa$ N)-2-pyridinamine- $\kappa$ N1]-, hexafluorophosphate(1-) (1:1), polymer with 9-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-3-ethenyl-9H-

carbazole and 2-[4-(1,1-dimethylethyl)phenyl]-5-[3-[5-(4-ethenylphenyl)-1,3,4-oxadiazol-2-yl]phenyl]-1,3,4-oxadiazole (CA INDEX NAME)

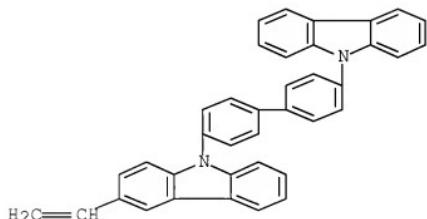
CM 1

CRN 847738-92-5  
CMF C28 H24 N4 O2



CM 2

CRN 728045-11-2  
CMF C38 H26 N2

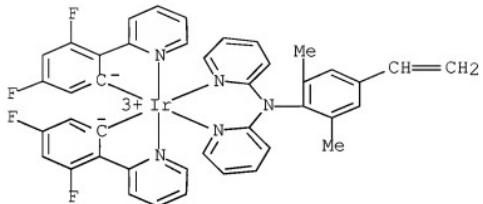


CM 3

CRN 942117-29-5  
CMF C42 H31 F4 Ir N5 . F6 P

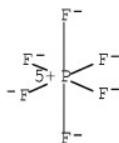
CM 4

CRN 942117-28-4  
CMF C42 H31 F4 Ir N5  
CCI CCS



CM 5

CRN 16919-18-9  
CMF F6 P  
CCI CCS



IT 942117-30-8P

(surface-emitting org. EL devices with high color purity contg.  
polymers with ortho-metalized complex-derived units)

L17 ANSWER 5 OF 10 ZCA COPYRIGHT 2009 ACS on STN

AN 146:471831 ZCA Full-text

TI Luminescent polymer for organic electroluminescent device

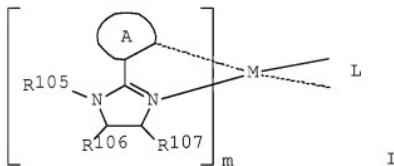
IN Takahashi, Yoshiaki; Yamaguchi, Akihiko

PA Showa Denko K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 35pp.

CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2007106793	A	20070426	JP 2005-296339	200510 11
PRAI	JP 2005-296339		20051011		
GI					



AB The invention relates to a luminescent polymer, suited for use in making a white-emitting org. electroluminescent device, comprising a polymer including a metal complex unit represented by I [M = Ir, Pt, Au, and Pd; R105 = F-contg. substituted group; R106 and R107 = H, substituted group, and may be joined to form a ring; A = 5- or 6-member ring; L = monoanionic bidentate ligand contg. polymerizable group; m = 1 or 2 integer; and C-C bond between R106- and R107-substituted carbons may be a single or double bond].

IT 935528-41-9P 935528-42-OP

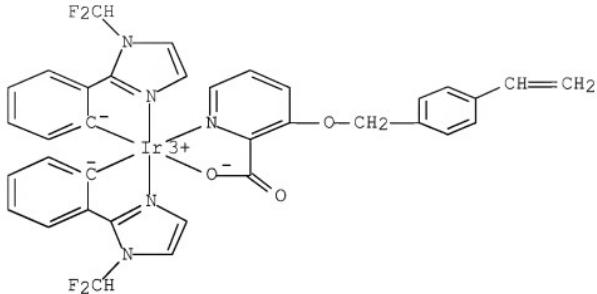
(luminescent polymer for org. electroluminescent device)

RN 935528-41-9 ZCA

CN Iridium, bis[2-[1-(difluoromethyl)-1H-imidazol-2-yl- $\kappa$ N3]phenyl- $\kappa$ C][3-[(4-ethenylphenyl)methoxy]-2-pyridinecarboxylato- $\kappa$ N1, $\kappa$ O2]-, polymer with 9-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-3-ethenyl-9H-carbazole and 2-[4-(1,1-dimethylethyl)phenyl]-5-[3-[5-(4-ethenylphenyl)-1,3,4-oxadiazol-2-yl]phenyl]-1,3,4-oxadiazole (CA INDEX NAME)

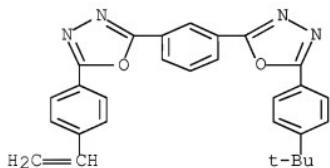
CM 1

CRN 935528-39-5  
CMF C35 H26 F4 Ir N5 O3  
CCI CCS



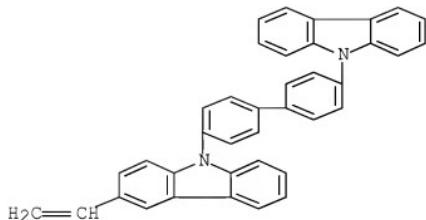
CM 2

CRN 847738-92-5  
CMF C28 H24 N4 O2



CM 3

CRN 728045-11-2  
CMF C38 H26 N2



RN 935528-42-0 ZCA

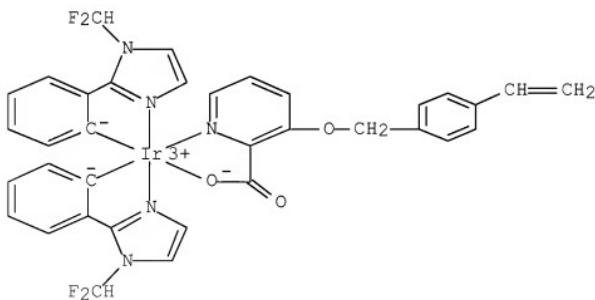
CN Iridium, bis[2-[1-(difluoromethyl)-1H-imidazol-2-yl-κN3]phenyl-κC] [3-[ (4-ethenylphenyl)methoxy]-2-pyridinecarboxylato-κN1,κO2]-, polymer with  
 9-[4'-(9H-carbazol-9-yl)[1,1'-biphenyl]-4-yl]-3-ethenyl-9H-  
 carbazole, diethenylbenzene and  
 2-[4-(1,1-dimethylethyl)phenyl]-5-[3-[5-(4-ethenylphenyl)-1,3,4-  
 oxadiazol-2-yl]phenyl]-1,3,4-oxadiazole (CA INDEX NAME)

CM 1

CRN 935528-39-5

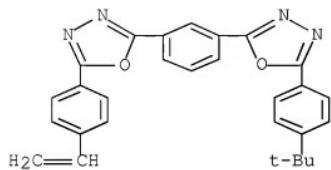
CMF C35 H26 F4 Ir N5 O3

CCI CCS



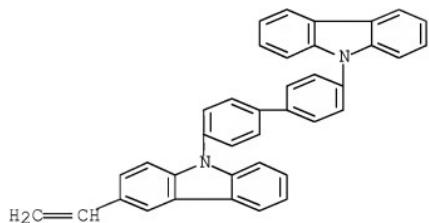
CM 2

CRN 847738-92-5  
CMF C28 H24 N4 O2



CM 3

CRN 728045-11-2  
CMF C38 H26 N2



CM 4

CRN 1321-74-0  
CMF C10 H10  
CCI IDS



2 [ D1-CH=CH<sub>2</sub> ]

IT 935528-41-9P 935528-42-OP  
(luminescent polymer for org. electroluminescent device)

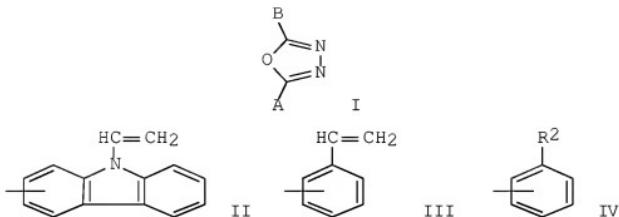
L17 ANSWER 6 OF 10 ZCA COPYRIGHT 2009 ACS on STN  
AN 144:413148 ZCA Full-text  
TI Metal-containing coordination compounds for polymers and organic white electroluminescent materials  
IN Nakaya, Tadao; Nakanishi, Tauto; Shiren, Kazushi; Saikawa, Tomoyuki; Tobita, Michiaki  
PA Hirose Engineering Co., Ltd., Japan  
SO PCT Int. Appl., 101 pp.  
CODEN: PIXXD2  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2006041056	A1	20060420	WO 2005-JP18696	200510 11

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM,  
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK,  
MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO,  
RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ,  
UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,  
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,  
TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRAI JP 2004-299249 A 20041013  
JP 2004-304967 A 20041019

OS MARPAT 144:413148  
GI



AB Title compds. which can be polymd. or dissolved in a solvent are represented by I, wherein A = compd. having a metal coordinated with a light emitting coordination compd. and a thiophene or an arom. ring; B = II, III, R1C:CH<sub>2</sub>, or IV; R1 = H or methyl; and R2 = C1-20 alkyl. Thus, 8-hydroxyquinoline 25, tetrachlorocarbon 110, ethanol 130, and potassium hydroxide 110 g were refluxed for 12 h, neutralized with acetic acid to give Et 8-hydroxy-5-quinolinecarboxylate, 6.1 g of which was reacted with 12 g hydrazine monohydrate at 100° for 12 h, 2.0 g of the resulting 8-hydroxy-5-quinolinecarboxylic acid hydrazide was reacted with 2.9 g 9-(2-chloroethyl)-9H-carbazole-3-carboxylic acid at 100° for 2 h to give dicarbohydrazide compd., 4.51 g of which was heated in the presence of polyphosphoric acid at 100° for 12 h, dehydrochlorinated, and reacted with 8-hydroxyquinoline and triisopropoxyaluminum to give a polymerizable metal-contg. coordination compd.

IT 883726-32-7P

(metal-contg. coordination compds. for polymers and org. white electroluminescent materials)

RN 883726-32-7 ZCA

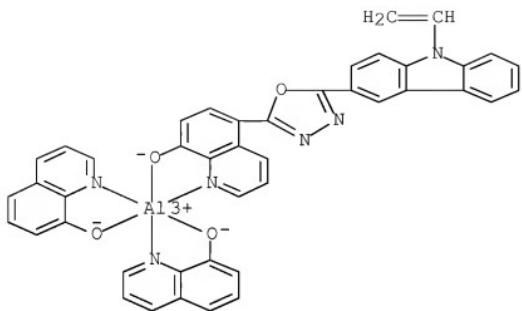
CN Aluminum, [5-[5-(9-ethenyl-9H-carbazol-3-yl)-1,3,4-oxadiazol-2-yl]-8-quinolinolato- $\kappa$ N1, $\kappa$ O8]bis(8-quinolinolato- $\kappa$ N1, $\kappa$ O8)-, polymer with 9-ethenyl-9H-carbazole (9CI)  
(CA INDEX NAME)

CM 1

CRN 883726-23-6

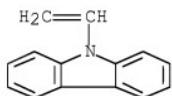
CMF C43 H27 Al N6 O4

CCI CCS



CM 2

CRN 1484-13-5  
CMF C14 H11 N

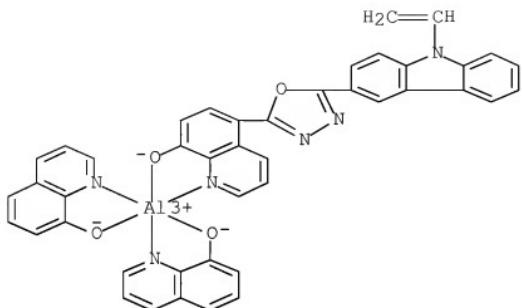


IT 883726-25-8P  
(metal-contg. coordination compds. for polymers and org. white  
electroluminescent materials)  
RN 883726-25-8 ZCA  
CN Aluminum, [5-[5-(9-ethenyl-9H-carbazol-3-yl)-1,3,4-oxadiazol-2-yl]-8-  
quinolinolato-κN1,κO8]bis(8-quinolinolato-  
κN1,κO8)-, polymer with methyl 2-methyl-2-propenoate  
(9CI) (CA INDEX NAME)

CM 1

CRN 883726-23-6

CMF C43 H27 A1 N6 O4  
CCI CCS



CM 2

CRN 80-62-6  
CMF C5 H8 O2



IT 883726-32-7P

(metal-contg. coordination compds. for polymers and org. white electroluminescent materials)

IT 883726-25-8P

(metal-contg. coordination compds. for polymers and org. white electroluminescent materials)

RE

- (1) Hirose Engineering Co Ltd; EP 1516903 A1 2005 ZCA
- (2) Hirose Engineering Co Ltd; JP 2005120071 A 2005 ZCA
- (3) Hirose Engineering Co Ltd; US 200589716 A1 2005
- (4) Parta, A; Chemistry of Materials 2002, V14(10), P4044
- (5) Sanyo Electric Co Ltd; JP 05-331460 A 1993 ZCA
- (6) Sanyo Electric Co Ltd; US 5456988 A 1993 ZCA
- (7) Toyota Central Research And Development Laboratories Inc; JP

10-259372 A 1998 ZCA

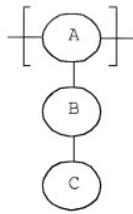
L17 ANSWER 7 OF 10 ZCA COPYRIGHT 2009 ACS on STN  
AN 144:159911 ZCA Full-text  
TI Organic electroluminescent devices giving out intense emission under  
low driving voltage  
IN Tamano, Michiko; Tsushima, Nozomi; Narihiro, Harunori  
PA Toyo Ink Mfg. Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 26 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 2006024644	A	20060126	JP 2004-199722	200407 06
	WO 2007074499	A1	20070705	WO 2005-JP23727	200512 26

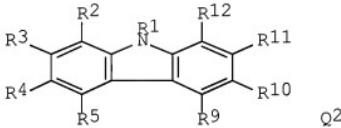
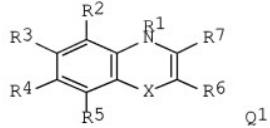
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM,  
KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG,  
MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT,  
RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT,  
TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,  
BF, BJ, CE, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,  
TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRAI JP 2004-199722 TO 20040706

GI



I



**AB** The device comprises a pair of electrodes sandwiching multiple nos. of org. thin film layers, including a hole blocking layer having ionization potential of  $\geq 0.1$  eV higher than that of the materials forming the light-emitting layer. Preferably, the hole-blocking material contains oxadiazolyl groups, e.g. 1,3-Bis[5-(p-tert-butylphenyl)-1,3,4-oxadiazol-2-yl]benzene, 2-(4-Biphenyl)-5-(4-tert-butylphenyl)-1,3,4-oxadiazole. Preferable light-emitting materials contg. structural repeating units I (A = nonconjugated trivalent org. group; B = direct bond, (un)substituted (hetero)arylene, (un)substituted ethenylene; C = Q1, Q2; R1-7, R9-12 = bonding position, H, substituent group; X = direct bond, O, S, Se, NH, NR8, SO2, CO, CO2, OCO, CH2; R1-7 may form (un)substituted aryl ring; R8 = alkyl, aryl) and amino-contg. units and materials showing light emission from triplet excitons are also given.

**IT** 847670-91-1

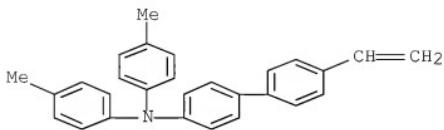
(light-emitting material; org. EL devices contg.  
oxadiazole-contg. hole-blocking layers for intense emission under  
low driving voltage)

**RN** 847670-91-1 ZCA

[1,1'-Biphenyl]-4-amine, 4'-ethenyl-N,N-bis(4-methylphenyl)-,  
polymer with 2-[4-(1,1-dimethylethyl)phenyl]-5-(4'-ethenyl[1,1'-  
biphenyl]-4-yl)-1,3,4-oxadiazole and  
9-(4'-ethenyl[1,1'-biphenyl]-4-yl)-9H-carbazole (CA INDEX NAME)

CRN 847670-86-4

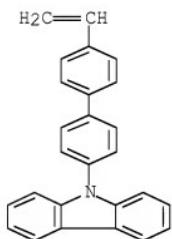
CMF C28 H25 N



CM 2

CRN 845755-86-4

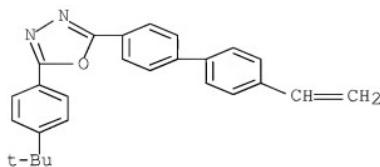
CMF C26 H19 N



CM 3

CRN 85884-56-6

CMF C26 H24 N2 O



IT 847670-91-1

(light-emitting material; org. EL devices contg.  
oxadiazole-contg. hole-blocking layers for intense emission under  
low driving voltage)

L17 ANSWER 8 OF 10 ZCA COPYRIGHT 2009 ACS on STN

AN 143:202694 ZCA Full-text

TI Polymeric organic electroluminescent materials showing good heat  
resistance and their high-efficiency devices showing low operating  
voltage

IN Shigehiro, Harunori; Tamano, Michiko; Tsushima, Nozomu

PA Toyo Ink Mfg. Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 24 pp.

CODEN: JKXXAF

DT Patent

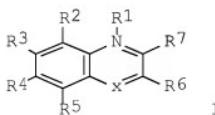
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
PI JP 2005220145	A	20050818	JP 2004-26306		200402 03

PRAI JP 2004-26306 20040203

GI



AB The materials are copolymers contg. first structural repeating units ABC (A = nonconjugated trivalent org group; B = arylene, heteroarylene; C = N-contg. heterocycl I; R1-R7 = bond position, H, substituent; X = direct bond, O, S, Se, NH, NR8, etc.; R8 = alkyl, aryl; R1-R7 may form aryl ring), second amino-contg. structural repeating units, and third structural repeating units DEF [D = nonconjugated trivalent org. group; E = direct bond, arylene, heteroarylene; F =  $\geq$ 1-hetero atom-contg. (condensed) ring]. Thus, an org. electroluminescent device having an emitter layer contg. 4-vinyl-4'-(9-carbazolyl)biphenyl-4-vinyl-4'-[N,N-di(p-tolyl)amino]biphenyl-4-vinyl-4'-[2-[5-(4-tert-butylphenyl)-1,3,4-oxadiazolyl]]biphenyl copolymer is exemplified.

IT 847670-91-1P

(polymeric org. electroluminescent materials showing good heat resistance for high-efficiency devices showing low operating voltage)

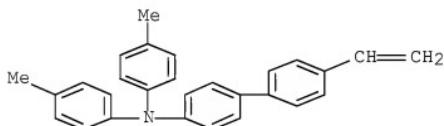
RN 847670-91-1 ZCA

CN [1,1'-Biphenyl]-4-amine, 4'-ethenyl-N,N-bis(4-methylphenyl)-, polymer with 2-[4-(1,1-dimethylethyl)phenyl]-5-(4'-ethenyl[1,1'-biphenyl]-4-yl)-1,3,4-oxadiazole and 9-(4'-ethenyl[1,1'-biphenyl]-4-yl)-9H-carbazole (CA INDEX NAME)

CM 1

CRN 847670-86-4

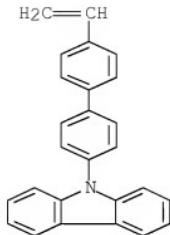
CMF C28 H25 N



CM 2

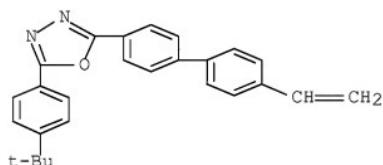
CRN 845755-86-4

CMF C26 H19 N



CM 3

CRN 85884-56-6  
CMF C26 H24 N2 O



IT 847670-91-1P

(polymeric org. electroluminescent materials showing good heat resistance for high-efficiency devices showing low operating voltage)

L17 ANSWER 9 OF 10 ZCA COPYRIGHT 2009 ACS on STN

AN 142:306135 ZCA Full-text

TI Material for organic electroluminescent devices and organic electroluminescents employing the material

IN Narihiro, Harunori; Tamano, Michiko; Tsushima, Nozomi

PA Toyo Ink Manufacturing Co., Ltd., Japan

SO PCT Int. Appl., 68 pp.

CODEN: PIXXD2

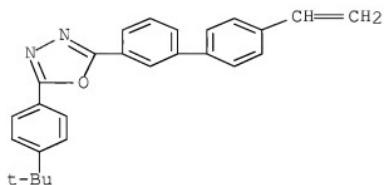
DT Patent

LA Japanese

## FAN.CNT 1

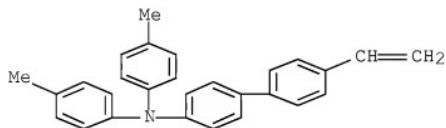
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005022961	A1	20050310	WO 2004-JP10836	200407 29
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	CN 1830231	A	20060906	CN 2004-80021673	200407 29
	KR 2006113881	A	20061103	KR 2006-700472	200601 09
<u>present application</u>	US 20080145705	A1	20080619	US 2006-566950	200602 03
PRAI	JP 2003-286948	A	20030805		
	WO 2004-JP10836	W	20040729		
AB	A material for org. electroluminescent devices which comprises a copolymer comprising: units each comprising a main chain having a trivalent unconjugated org. residue and a monovalent org. residue bonded to the main chain through a structure comprising two or more groups conjugately bonded to each other; and units each having an amino group.				
IT	847670-97-7 847670-98-8 (material and org. electroluminescent device employing it)				
RN	847670-97-7 ZCA				
CN	[1,1'-Biphenyl]-4-amine, 4'-ethenyl-N,N-bis(4-methylphenyl)-, polymer with 2-[4-(1,1-dimethylethyl)phenyl]-5-(4'-ethenyl[1,1'-biphenyl]-3-yl)-1,3,4-oxadiazole and 9-(4'-ethenyl[1,1'-biphenyl]-4-yl)-9H-carbazole (9CI) (CA INDEX NAME)				
	CM 1				

CRN 847670-96-6  
CMF C26 H24 N2 O



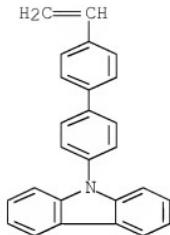
CM 2

CRN 847670-86-4  
CMF C28 H25 N



CM 3

CRN 845755-86-4  
CMF C26 H19 N



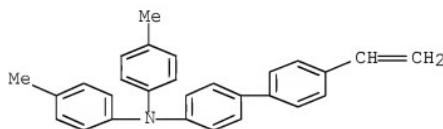
RN 847670-98-8 ZCA

CN [1,1'-Biphenyl]-4-amine, 4'-ethenyl-N,N-bis(4-methylphenyl)-, polymer with 2-[4-(1,1-dimethylethyl)phenyl]-5-(4'-ethenyl[1,1'-biphenyl]-4-yl)-1,3,4-oxadiazole, 9-(4'-ethenyl[1,1'-biphenyl]-4-yl)-9H-carbazole and 9-ethenyl-9H-carbazole (9CI) (CA INDEX NAME)

CM 1

CRN 847670-86-4

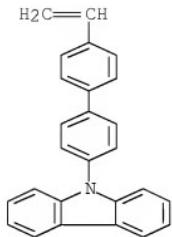
CMF C28 H25 N



CM 2

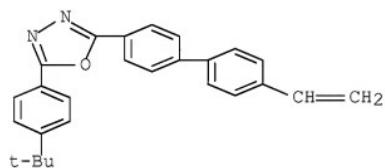
CRN 845755-86-4

CMF C26 H19 N



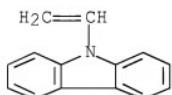
CM 3

CRN 85884-56-6  
CMF C26 H24 N2 O



CM 4

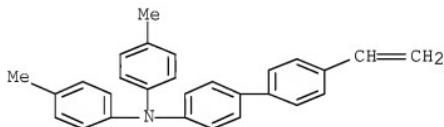
CRN 1484-13-5  
CMF C14 H11 N



IT 847670-91-1P 847670-99-9P  
(material and org. electroluminescent device employing it)  
RN 847670-91-1 ZCA  
CN [1,1'-Biphenyl]-4-amine, 4'-ethenyl-N,N-bis(4-methylphenyl)-,  
polymer with 2-[4-(1,1-dimethylethyl)phenyl]-5-(4'-ethenyl[1,1'-  
biphenyl]-4-yl)-1,3,4-oxadiazole and  
9-(4'-ethenyl[1,1'-biphenyl]-4-yl)-9H-carbazole (CA INDEX NAME)

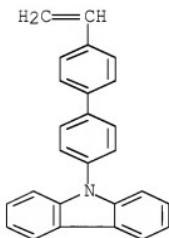
CM 1

CRN 847670-86-4  
CMF C28 H25 N



CM 2

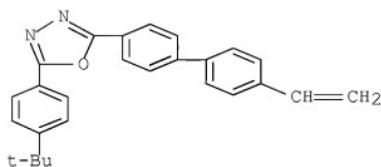
CRN 845755-86-4  
CMF C26 H19 N



CM 3

CRN 85884-56-6

CMF C26 H24 N2 O



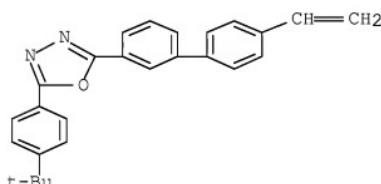
RN 847670-99-9 ZCA

CN [1,1'-Biphenyl]-4-amine, 4'-ethenyl-N,N-bis(4-methylphenyl)-, polymer with 2-[4-(1,1-dimethylethyl)phenyl]-5-(4'-ethenyl[1,1'-biphenyl]-3-yl)-1,3,4-oxadiazole, 9-(4'-ethenyl[1,1'-biphenyl]-4-yl)-9H-carbazole and 9-ethenyl-9H-carbazole (9CI) (CA INDEX NAME)

CM 1

CRN 847670-96-6

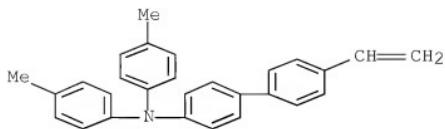
CMF C26 H24 N2 O



CM 2

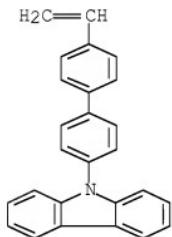
CRN 847670-86-4

CMF C28 H25 N



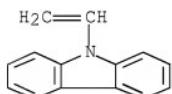
CM 3

CRN 845755-86-4  
CMF C26 H19 N



CM 4

CRN 1484-13-5  
CMF C14 H11 N



IT 847670-97-7 847670-98-8  
(material and org. electroluminescent device employing it)

IT 847670-91-1P 847670-99-9P  
(material and org. electroluminescent device employing it)

RE

- (1) Fuji Photo Film Co Ltd; US 20020041979 A1 2002 ZCA
- (2) Fuji Photo Film Co Ltd; JP 2002105445 A 2002 ZCA
- (3) Fuji Photo Film Co Ltd; JP 2002302516 A 2002 ZCA
- (4) Fuji Photo Film Co Ltd; JP 2002363227 A 2002 ZCA
- (5) Fuji Photo Film Co Ltd; US 20030082405 A1 2002 ZCA
- (6) Nippon Hoso Kyokai; WO 2003018653 A1 2003

L17 ANSWER 10 OF 10 ZCA COPYRIGHT 2009 ACS on STN

AN 138:376103 ZCA Full-text

TI Electroluminescent device with liquid crystal copolymer

IN Mochizuki, Hirotaka; Ikeda, Tomiki

PA Kokusaki Kiban Zairyo Kenkyusho K. K., Japan; JSR Ltd.

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	----	-----	-----	
-----	-----	-----	-----	-----	

PI JP 2003133073 A 20030509 JP 2001-332087

200110  
30

PRAI JP 2001-332087 20011030

AB The invention refers to an electroluminescent device comprising a copolymer of a liq. crystal monomer having a liq. crystal side chain, and a functional monomer 2-[CH<sub>2</sub>:C(R1)CO<sub>2</sub>(CH<sub>2</sub>)mO-p-C<sub>6</sub>H<sub>4</sub>-p-C<sub>6</sub>H<sub>4</sub>]-5-Y-1,3,4-oxadiazole- [R1 = H, Me; Y = -p-C<sub>6</sub>H<sub>4</sub>N(CH<sub>3</sub>)<sub>2</sub>, -p-C<sub>6</sub>H<sub>4</sub>N(Ph)<sub>2</sub>, 3-(N-methylcarbazolyl); m = 2 - 11].

IT 521971-85-7P 521971-90-4P

(electroluminescent device with liq. crystal copolymer)

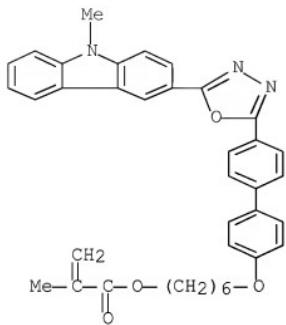
RN 521971-85-7 ZCA

CN 2-Propenoic acid, 2-methyl-,  
6-[(4'-cyano[1,1'-biphenyl]-4-yl)oxy]hexyl ester, polymer with  
6-[[4'-(5-(9-methyl-9H-carbazol-3-yl)-1,3,4-oxadiazol-2-yl)[1,1'-biphenyl]-4-yl)oxy]hexyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

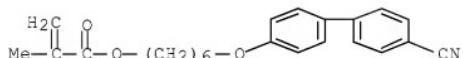
CRN 521971-77-7

CMF C37 H35 N3 O4



CM 2

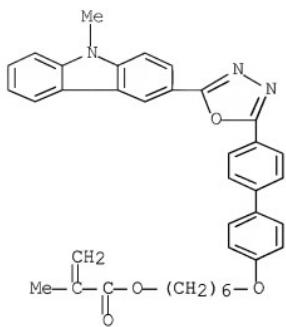
CRN 117318-91-9  
 CMF C23 H25 N O3



RN 521971-90-4 ZCA  
 CN 2-Propenoic acid, 2-methyl-,  
 6-[(4'-cyano[1,1'-biphenyl]-4-yl)oxy]hexyl ester, polymer with  
 6-[(4'-(5-[4-(diphenylamino)phenyl]-1,3,4-oxadiazol-2-yl)[1,1'-  
 biphenyl]-4-yl]oxy]hexyl 2-methyl-2-propenoate and  
 6-[(4'-(5-(9-methyl-9H-carbazol-3-yl)-1,3,4-oxadiazol-2-yl)[1,1'-  
 biphenyl]-4-yl]oxy]hexyl 2-methyl-2-propenoate (9CI) (CA INDEX  
 NAME)

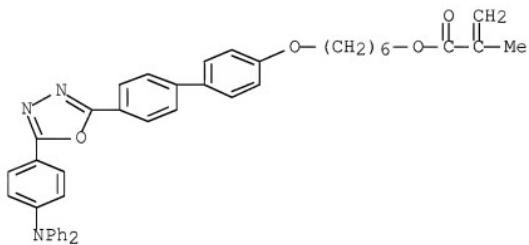
CM 1

CRN 521971-77-7  
 CMF C37 H35 N3 O4



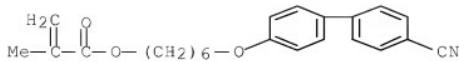
CM 2

CRN 521971-76-6  
CMF C42 H39 N3 O4



CM 3

CRN 117318-91-9  
CMF C23 H25 N O3



IT 521971-85-7P 521971-90-4P  
(electroluminescent device with liq. crystal copolymer)